

## REMARKS

Claims 1-29 are currently pending. Of those claims, claims 1, 3-4, 13-14 and 22-25 are clarified to improve upon the wording as supported by, for example, pages 8-9 of the specification. No new matter is introduced into the specification.

In the outstanding Office Action, claims 1-29 are rejected under 35 USC Section 112, second paragraph, as lacking antecedent basis for “the distance” in claims 1, 13 and 22, as well as lacking antecedent basis for “the total node number” in claims 3 and 24.

Applicant respectfully traverses the foregoing rejection, but has clarified claims 1, 3, 13, 22 and 24 in the interest of advancing the prosecution of the subject application. Accordingly, reconsideration and withdrawal of the indefiniteness rejection is believed to be warranted.

Claims 1-29 are then rejected under 35 USC Section 112, first paragraph, as lacking enablement.

In particular, the Patent Office contends that the limitation “estimating a distance on the basis of the ratio” set forth in independent claims 1, 3, 13, 22 and 24 is not sufficiently described in the specification to enable one skilled in the art to make and/or use the invention.

The foregoing rejection is respectfully disagreed with, and is traversed below.

Independent claims 1, 3, 13, 22 and 24 recite “...the distance being a function of the ratio such that the larger the ratio the larger the distance.” The Examiner’s attention is respectfully directed to the Equation (1) on page 8:  $D1=F(Ra)$  and descriptions at pages 8-9. It is respectfully asserted that it would be clear to the skilled artisan that, for example, in embodiments of Applicant’s invention the distance is a function of the ratio such that the larger the ratio the larger the distance. As described in the specification in detail, at pages 7-17, with reference to Figures 1-3, it is respectfully asserted that one of ordinary skill in the art would clearly understand the claimed distance estimation and be able to perform it without any undue experimentation. The Patent Office has not provided any reason as to why the skilled artisan would be unable to

estimate the distance based on the ratio as claimed herein. It is respectfully asserted that the detailed specification and Figures are sufficient to enable one skilled in the art, and respectfully request the Examiner to reconsider and withdrawn this rejection, particularly in view of the further clarification of the ratio in the independent claims.

Lastly, claims 1-4, 8-14, 18-25 and 29 are rejected under 35 USC Section 103(a) as being unpatentable over Chheda, U.S. Patent No. 5,946,621, in view of Petty, U.S. Patent No. 6,308,073.

It is noted that claims 5-7, 15-17 and 26-28 were not rejected in view of any art and thus are believed to be in condition for immediate allowance in view of the foregoing. Regarding the rejection of remaining claims 1-4, 8-14, 18-25 and 29, based on the combined teachings of Chheda and Petty, this rejection is respectfully disagreed with, and traversed below.

According to an embodiment of Applicant's invention, a mobile node calculates a ratio between the number of nodes present within a first region and the number of nodes present within second regions. The first region is the region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other, while the second region is the region where the communication zones do not overlap. The distance to a candidate node adjacent to the mobile node is then estimated based on the calculated ratio.

Applicant's independent claim 1 specifies:

1. A method comprising:
  - specifying, as a candidate node, a node present within a communication zone of a mobile node;
  - calculating, for each specified candidate node, a ratio between a number of nodes present within a first region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other, and a number of nodes present within a second region defined by the communication zone of the candidate node which does not overlap the communication zone of the mobile node; and
  - estimating a distance between the mobile node and the each specified candidate node on the basis of the ratio, the distance being a function of the ratio such that the larger the ratio the larger the distance.

Similarly, Applicant's independent claims 3, 13, 22 and 24 recite, respectively:

3. A method comprising:

specifying a node present within a communication zone of a mobile node;

specifying a designated node out of neighbor nodes;

specifying a next neighbor node present within a communication zone of the designated node;

counting a common node number as the number of nodes common to the neighbor node and the next neighbor node;

counting a non-common node number resulting from a subtraction of the common node number from a total node number of nodes of the neighbor node and the next neighbor node; and

estimating a distance between the mobile node and the designated node, on the basis of a ratio between the common node number and the non-common node number, the distance being a function of the ratio such that the larger the ratio the larger the distance.

13. An apparatus comprising:

a controller configurable to specify, as a candidate node, a node present within a communication zone of a mobile node, and, for each specified candidate node, to determine a ratio between a number of nodes present within a first region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other, and a number of nodes present within a second region defined by a portion of the communication zone of the specified candidate node which does not overlap the communication zone of the mobile node; and estimating a distance between that specified candidate node and the mobile node on the basis of the ratio, the distance being a function of the ratio such that the larger the ratio the larger the distance.

22. An apparatus comprising:

means for specifying, as a candidate node, a node present within a communication zone of a mobile node;

means for calculation, for each specified candidate node, a ratio between a number of nodes present within a first region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other, and a number of nodes present within a second region defined by the communication zone of the specified candidate node which does not overlap the communication zone

of the mobile node; and

means for estimating a distance between the mobile node and the each specified candidate node on the basis of the ratio, the distance being a function of the ratio such that the larger the ratio the larger the distance.

24. An apparatus comprising:

means for specifying neighbor nodes present within a communication zone of a mobile node;

means for specifying a designated node out of the neighbor nodes;

means for specifying a next neighbor node present within a communication zone of the designated node;

means for counting a common node number as the number of nodes common to the neighbor node and the next neighbor node;

means for counting a non-common node resulted from subtracting the common node number from a total node number of the neighbor node and the next neighbor node; and

means for estimating a distance between the mobile node and the designated node, on the basis of a ratio between the common node number and the non-common node number, the distance being a function of the ratio such that the larger the ratio the larger the distance.

Claims 2, 4-12, 14-21, 23 and 25-29 depend from an independent claim and recite further advantageous features of the claimed invention.

Chheda discloses a method of optimally updating the neighbor set during soft handoff in a CDMA cellular telephone system, but fails to disclose or suggest the characteristics of Applicant's claimed invention. More particularly, the Patent Office has asserted that the "first region" is disclosed by Chheda in Figs. 2-4 and in column 9, lines 14-60, the "second region" in Fig. 1, and the number of nodes present within the second region where both communication zones do not overlap (Fig. 1, "base station," "B1"). However, it is respectfully emphasized that one of ordinary skill in the art would clearly understand that

these figures and descriptions do not correspond to the first region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other and “a second region defined by the communication zone of the specified candidate node which does not overlap the communication zone of the mobile node.” Moreover, the skilled artisan would also clearly understand that these figures and descriptions do not correspond to “counting a non-common node number resulting from a subtraction of the common node number from the total node number of nodes of the neighbor node and the next neighbor node; and estimating a distance between the mobile node and the designated node, on the basis of a ratio between the common node number and the non-common node number.” The Examiner is respectfully requested to reconsider his interpretation of Chheda in view of the foregoing comments.

Petty discloses that the remote station uses the propagation delays to calculate distances to the respective base stations. That is, the way the remote station estimates the distance to the base stations is not based on the ratio between the number of nodes present within a first region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other, and the number of nodes present within a second region defined by the communication zone of the specified candidate node which does not overlap the communication zone of the mobile node.

Neither Chheda nor Petty mention the first region where the communication zone of the mobile node and a communication zone of the candidate node overlap each other and the second region where both the communication zones do not overlap. Even if the first and the second region were implied in the two cited references (which Applicant does not admit to be the case), they do not disclose or suggest calculating a ratio between a number of nodes present within a first region and a number of nodes present within a second region. Nor do the references disclose or suggest estimating a distance between the mobile node and the specified candidate node, the distance being a function of the ratio such that the larger the ratio the larger the distance.

Accordingly, it is respectfully asserted that the cited references do not disclose or suggest the

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subject matter set forth in Applicant's independent claims 1, 3, 13, 22 or 24. Nor is there a reason to combine and modify their teachings in an attempt to arrive at the subject claims. Thus, the Examiner is respectfully urged to reconsider and withdraw the rejections based upon Chheda and Petty.

In view of the foregoing, Applicant's independent claims 1, 3, 13, 22 and 24 are believed to be in condition for allowance. Similarly, remaining dependent claims 2, 4-12, 14-21, 23 and 25-29 also are believed to be patentable at least in view of their dependency from an allowable independent claim. An early notification of the allowability of claims 1-29 is earnestly solicited.

Respectfully submitted:

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